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A Biocoenose of Papyrus Heads (*Cyperus papyrus*)

Papyrus (*Cyperus papyrus*) is of historical interest because it was used by the ancient Egyptians, Greeks, and Romans in making their writing parchments and has given us the word paper. Paper pulp is still obtained from papyrus and recently (S. and E. African Yearbook, p. 704) it was estimated that enough of the sedge existed at the mouth of the Umfolosi River, Zululand, to produce 100,000 tons of pulp annually.

Papyrus is widespread in Africa and occurs in several nearby regions (as Sicily and Palestine). Stretching along the upper White Nile River for roughly 250 miles, and extending laterally in places 200 miles, is a vast papyrus swamp called the Sudd which occupies an area of possibly 50,000 square miles. It lies entirely in the Anglo-Egyptian Sudan west of Central Abyssinia. The Sudd is probably one of the largest areas in the entire world dominated by a single sedge. In it papyrus forms a dense growth 8 to 15 feet high floating on the water or mud. Large rafts often break loose and float downstream or drift with the wind. Not only is navigation impeded or temporarily stopped but the evaporation from the swamp is so large as to materially lower the river level. The Sudd is treated by the Egyptians of lower Egypt as a vital problem since they depend upon the combined White and Blue Nile for their entire water supply. They keep a staff of men continually at work cutting drainage canals and attempting to keep these open. At the same time the swamp acts as a huge sponge to hold back the flow of water during the rains and to release it gradually during the dry sea-

color, being much paler than most of the African species. Most of the species of this genus in Africa are found in humid West Africa though several are known from East and South Africa.

Cataulacus pygmaeus E. André, ssp.

Workers and an alate female of this species were found July 10 with *Acantholepis, Pheidole* and spiders at the base of the papyrus heads where the flower spikelets left the stem. The numerous spikelets here formed a mass between one and two inches thick which was easily dense enough for nesting purposes.

This ant has retained the black color with ferruginous legs of the species. The size is distinctly smaller than another subspecies which I took in the Imatong Mts., Sudan, and the subspecies *lujae* Forel. *C. pygmaeus* was originally described from Sierra Leone and it or its forms have since been recorded from widely spread African localities.

Acantholepis capensis simplex Forel

Numerous workers were taken July 10 and 12 from papyrus and after leaving the Sudd July 13 when the boat brushed against papyrus and grass. The ants are small and black.

The subspecies *simplex* was originally described from Somaliland and since reported from widely scattered East and South African localities. I found it at 6000–6200 ft. in the Imatong Mts., Sudan. The numerous forms of *capensis* including *simplex* are recorded as nesting only in soil except for the subspecies *issore* which I found in the Imatongs nesting in *Acacia twigs.*

Camponotus (*Myrmoturba*) *maculatus* (Fabr.)

This species was taken July 10. The media workers which were found were similar in all details to those taken in a variety of habitats. The color is basal yellowish brown with infuscated head and patches on the thorax and gaster. The workers appear to belong to the typical form of the species which was originally described from Sierra Leone. Numerous subspecies and varieties have been described from all over Africa and much of the rest of the world. The paler subspecies *aegyptiacus* Emery which would seem to blend in well with papyrus is an inhabitant of dryer parts of the Sudan and was taken north of the Sudd (Khartoum, Ed Dueim, Er Renk) and to the south in the Imatong Mts.

Camponotus (*Myrmotrema*) sp. nr. *galla* and *perrisi* Forel

This is a black species with upright yellowish hairs and shining yellow appressed pubescence on the gaster. It seemed one of the commonest ants and was taken several times on July 10 and 12 and below the village of Bor. The workers were taken in papyrus heads as well as from the boat. The ants are comparatively small for *Camponotus* and would not require a large nest.

Summary

Papyrus (*Cyperus papyrus*) covers an area called the Sudd, extending in places 200 miles or more in width along the upper White Nile River in the Anglo-Egyptian Sudan west of Central Abyssinia. This sedge grows eight to fifteen feet high and terminates in large heads about two feet in diameter composed of flower spikelets.

A biocoenose centers about the papyrus heads and consists of at least eight species of ants and species of other orders of Arthropoda, chiefly Orthoptera, Coleoptera, parasitic Hymenoptera and Arachnida. Four of the ant species and several species of beetles and spiders resembled each other in size, general body shape and color, the color being a reddish ferruginous blending in well with papyrus to the human eye. The resemblance between two species of spiders and three ant species in body shape was marked.

The biocoenose would be worthy of study because of the historical, economic and scientific interest in papyrus.

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